

## Severe acute respiratory syndrome in children: Experience in a regional hospital in Hong Kong

Wa-keung Chiu; Patrick C. H. Cheung; K. L. Ng; Patricia L. S. Ip; V. K. Sugunan; David C. K. Luk; Louis C. K. Ma; Bill H. B. Chan; K. L. Lo; W. M. Lai;

**Objective:** To report the clinical, laboratory, and radiologic features of children with severe acute respiratory syndrome (SARS) and to examine the difference between the younger and older age groups.

**Design:** Retrospective descriptive cohort study.

**Setting:** A regional hospital in Hong Kong.

**Patients:** Children younger than 18 yrs with SARS.

**Results:** Twenty-one children were included, with a mean age of  $10.7 \pm 5.1$  yrs. Children with SARS presented with fever, nonproductive cough, malaise, chills, headache, myalgia, and loss of appetite. Examination of the chest showed minimal auscultatory findings. Common laboratory findings included lymphopenia, thrombocytopenia, and mild elevations of activated partial thromboplastin time, alanine transaminase, lactic dehydrogenase, and creatine phosphokinase. Bacteriologic and virologic studies were all negative for common pathogens. Unilateral focal opacity was the commonest finding in chest radiography. High-resolution

computerized tomography of the thorax was an early diagnostic tool if the chest radiograph was negative. The clinical course was less severe in comparison with adult patients. However, adolescents (age,  $\geq 12$  yrs) resembled adults in their clinical features. When compared with the younger age group, the adolescents had significantly higher temperatures, more constitutional upset, and a greater need for steroid treatment. Children younger than 12 yrs seemed less ill but had more coughing. On the whole, the outcome was favorable.

**Conclusion:** Severe acute respiratory syndrome affects children, but the course is less severe. Nevertheless, the disease could have a significant psychosocial impact on children because of the potential seriousness of the disease in their adult family members. (*Pediatr Crit Care Med* 2003; 4:279-283)

**KEY WORDS:** severe acute respiratory syndrome (SARS); children; ribavirin; steroid; novel coronavirus

Severe acute respiratory syndrome (SARS) is a newly recognized clinical disease that has become a major threat to global public health. The disease first appeared in the Guangdong province in China in November 2002. Since then, 3,861 cases with 217 deaths in 25 countries have been reported to the World Health Organization (WHO) (as of April 21, 2003) (1). The early reports of such cases are mainly in adults (2-4). The first patient in Hong Kong, a visitor from China, was diagnosed in February 2003. A large outbreak in the Prince of Wales

Hospital in mid-March 2003 was traced to that patient (4). An outbreak also occurred around the end of March 2003 in a housing estate in Hong Kong. Subsequently, this outbreak was traced to a patient discharged from the Prince of Wales Hospital who made repeated visits to a resident in the housing estate. Children infected during the early phase of this outbreak were admitted to United Christian Hospital. We describe our experience in the management of 21 such children.

### METHODS

We included children younger than 18 yrs who were admitted to the hospital between March 25 and 31, 2003, and who fulfilled the clinical diagnosis of SARS for reporting to the SARS registry of the Hospital Authority of Hong Kong (5). The criteria include the following: 1) radiographic evidence of infiltrates consistent with pneumonia; 2) fever  $>38^{\circ}\text{C}$  or history of such at any time in the past 2 days; and 3) at least two of the following: a history of chills in the past 2 days, cough (new or increased cough) or breathing difficulty, general malaise or myalgia, known history of expo-

sure. A patient was excluded if an alternative diagnosis fully explained the illness.

A detailed history was taken and a physical examination was performed for each patient. Special emphasis was placed on the symptoms of SARS, the patient's past health, any history of affected family members, traveling, visits to medical facilities, and contact with healthcare workers, as well as any contact with birds or live poultry. A complete blood count, renal and liver function tests, creatinine phosphokinase, and clotting studies were done. Microbiological investigations included bacterial culture of blood and sputum, serology, and nasopharyngeal aspirate for virology. Other virologic studies included rapid antigen tests for influenza A and B, viral culture of respiratory viruses (influenza, parainfluenza, adenovirus, and respiratory syncytial virus), and the reverse transcriptase-polymerase chain reaction (RT-PCR) for coronavirus. A chest radiography was taken for each patient. High-resolution computerized tomography of the thorax was performed for patients with suspected SARS who had negative chest radiographs.

The treatment regimen used was according to the Hospital Authority Guidelines on SARS (5). It consists of the use of a third-generation

From the Departments of Pediatrics and Adolescent Medicine (WKC, PCHC, KLN, PLSI, VKS, DOKL, LCKM, BHBC), Diagnostic Radiology and Organ Imaging (KLL), and the Department of Pathology (Microbiology) (WML), United Christian Hospital, Hong Kong.

Address requests for reprints to: Wa-keung Chiu, MD, Department of Pediatrics and Adolescent Medicine, United Christian Hospital, Hip Wo Street, Kwun Tong, Hong Kong. E-mail: chiuwkv1@netvigator.com

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